

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An anti-microbial composition consisting essentially of:

(i) at least one anti-microbial agent, wherein at least one of the anti-microbial agents is an ~~first~~ anti-microbial agent having a high surface tension of from 20 to 35 mN/m, and is selected from the group consisting of (a) a quarternary ammonium compound having the general formula $R^1R^2R^3R^4N^+X^-$, in which one or two of the R groups are alkyl substituted by aryl or interrupted by aryl or oxygen and the other R groups are the same or different and are C₁ to C₄ alkyl groups, (b) a dialkyldimethylammonium compound wherein the two non-methyl alkyl groups are selected from alkyl groups comprising from 8 to 12 carbon atoms, and (c) a benzalkonium halide or an aryl ring substituted benzalkonium halide,

(ii) at least one compound having a low surface tension of from 8 to 14 mN/m, and selected from the group consisting of silanes, soya lecithins, polydimethylsiloxanes, polydimethylhydroxysiloxanes, and mixtures thereof, and

(iii) at least one polar solvent, wherein in use the anti-microbial composition acts substantially to reduce or control the formation of microbial colonies on or at a surface to which the composition is applied.

2. – 45. (canceled).

46. (previously presented) An anti-microbial composition according to Claim 1, wherein the surface tension of the at least one compound (ii) is 10 mN/m.

47 – 51. (canceled).

52. (currently amended) An anti-microbial composition according to Claim 1, wherein ~~the~~ at least one of the anti-microbial agents is of a polar nature.

53. (original) An anti-microbial composition according to Claim 1, comprising at least one anti-microbial agent selected from bacteriocidal, fungicidal, algicidal, yeasticidal and moldicidal agents.

54. – 60. (canceled).

61. (currently amended) An anti-microbial composition according to Claim 1, wherein at least one of the anti-microbial agents ~~quaternary ammonium compound~~ is selected from benzenemethanaminium N-dodecyl-N,N-dimethylchloride, and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride.

62. (currently amended) An anti-microbial composition according to Claim 1, wherein ~~the~~ at least one of the anti-microbial agents is selected from an amphoteric compound, an iodophore, a phenolic compound, a quaternary ammonium compound, a hypochlorite and a nitrogen based heterocyclic compound.

63. – 69. (canceled).

70. (previously presented) An anti-microbial composition according to Claim 62, wherein the or each phenolic compound is selected from a methyl, ethyl, butyl, halo and aryl substituted phenol.

71. (previously presented) An anti-microbial composition according to Claim 62, wherein the or each phenolic compound is selected from 2-phenylphenol, 2-benzyl-4-chlorophenol, 2-cyclopentanol-4-chlorophenol, 4-t-amylphenol, 4-t-butylphenol, 4-chloro-2-pentylphenol, 6-chloro-2-pentylphenol, p-chlorometa-xlenol, 2,4,4-trichloro-2-hydroxydiphenol, thymol, 2-i-propyl-3-methylphenol, chlorothymol, 3-methyl-4-chlorophenol, 2,6-dichloro-4-n-alkyl

phenols, 2,4-dichloro-meta-xlenol, 2,4,6-trichlorophenol and 2-benzyl-4-chlorophenol.

72. – 77. (canceled).

78. (currently amended) A composition according to Claim 1, wherein at least one of the first anti-microbial agents is selected from benzenemethanaminium N-dodecyl-N,N-dimethylchloride, and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride, and the at least one additional anti-microbial agent is selected from 2-phenylphenol, 2-octyl-2H-isothiazol-3-one, 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one.

79. – 81. (canceled).

82. (previously presented) An anti-microbial composition according to Claim 1, comprising from 1 to 4% by volume of the at least one compound (ii).

83. (previously presented) An anti-microbial composition according to Claim 1, wherein the at least one polar solvent is selected from water, an alcohol, an ester, a hydroxyl or glycol ester, a polyol, a ketone, and mixtures thereof.

84. (previously presented) An anti-microbial composition according to Claim 1, wherein the at least one polar solvent is selected from n-propanol, water, isopropanol, diethylene glycol and dipropylene glycol.

85. (previously presented) An anti-microbial composition according to Claim 1, comprising from 1 to 70% by volume of the at least one polar solvent.

86. – 87. (canceled)

88. (original) A formulation comprising the anti-microbial composition according to Claim 1, and a functional material.

89. (currently amended) A formulation according to Claim 88, wherein the functional material compound is selected from plastics, fibres, coatings, films, laminates, adhesives, sealants, clays, china, ceramics, concrete, sand, paints, varnishes, lacquers, cleaning agents and settable or curable compositions such as fillers, grouts, mastics and putties.

90. (original) A formulation according to Claim 88, wherein the formulation comprises from 0.1 to 5.0% by weight of the anti-microbial composition.

91. (original) A formulation according to Claim 88, wherein the formulation comprises from 0.5 to 2.0% by weight of the anti-microbial composition.

92. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the anti-microbial composition according to Claim 1 to the surface.

93. – 94. (canceled)

95. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 88 to the surface.

96. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 89 to the surface.

97. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 90 to the surface.

98. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 91 to the surface.

99. (currently amended) A method of manufacturing an anti-microbial composition according to Claim 1, the method comprising the steps of (a) mixing the ~~first~~ anti-microbial agent and any additional anti-microbial agents together, (b) adding the at least one compound (ii) to the ~~first~~ anti-microbial agent(s), (c) adding the at least one polar solvent to the mixture of the at least one compound ([i]ii) and anti-microbial agent(s) and (d) agitating the resulting mixture until a clear solution is formed.

100. (original) A method of manufacturing a formulation comprising the step of adding the anti-microbial composition of Claim 1 to a functional material.

101. – 104. (canceled).

105. (previously presented) An anti-microbial composition according to Claim 1, wherein the at least one compound (ii) is selected from polydimethylsiloxanes, and polydimethylhydrosiloxanes and mixtures thereof.

106. (currently amended) An anti-microbial composition containing as a solvent a polar solvent which is selected from the group consisting of water, at least one alcohol, at least one glycol ester, at least one polyol, at least one ketone or a mixture thereof, and comprising:

- (i) at least one anti-microbial agent, wherein at least one of the anti-microbial agents is an ~~at least one first~~ anti-microbial agent having a high surface tension of from 20 to 35 mN/m and selected from the group

consisting of (a) a quarternary ammonium compound having the general formula $R^1R^2R^3R^4N^+X^-$, in which one or two of the R groups are alkyl substituted by aryl or interrupted by aryl or a ~~heteroatom~~ oxygen and the other R groups are the same or different and are C₁ to C₄ alkyl groups, (b) a dialkyldimethylammonium compound wherein the two non-methyl alkyl groups are selected from medium and long chain alkyl groups comprising from 8 to 12 or more carbon atoms, and (c) a benzalkonium halide or an aryl ring substituted benzalkonium halide; and

(ii) at least one compound having a low surface tension of from 8 to 14 mN/m and selected from the group consisting of silanes, soya lecithins, polydimethylsiloxanes, polydimethylhydroxysiloxanes, and mixtures thereof, wherein in use the anti-microbial composition acts substantially to reduce or control the formation of microbial colonies on or at a surface to which the composition is applied.

107. (previously presented) An anti-microbial composition according to Claim 106, wherein the surface tension of the at least one compound (ii) is 10 mN/m.

108. - 110. (canceled).

111. (previously presented) An anti-microbial composition according to Claim 106 comprising at least one additional anti-microbial agent.

112. (currently amended) An anti-microbial composition according to Claim 111, wherein ~~the~~ at least one of the first anti-microbial agents ~~and/or the at least one additional anti-microbial agent~~ is of a polar nature.

113. (previously presented) An anti-microbial composition according to Claim 106 comprising at least one anti-microbial agent selected from bacteriocidal, fungicidal, algicidal, yeasticidal and moldicidal agents.

114. (canceled).

115. (currently amended) An anti-microbial composition according to Claim 106, wherein at least one of the anti-microbial agents ~~quarternary ammonium compound~~ is selected from benzenemethanaminium N-dodecyl-N,N-dimethylchloride, and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride.

116. (previously presented) An anti-microbial composition according to

Claim 111, wherein the at least one additional anti-microbial agent is selected from amphoteric compounds, iodophores, phenolic compounds, quarternary ammonium compounds, hypochlorites and nitrogen-based heterocyclic compounds.

117. (previously presented) An anti-microbial composition according to Claim 116, wherein the or each phenolic compound is selected from a methyl, ethyl, butyl, halo and aryl substituted phenol.

118. (previously presented) An anti-microbial composition according to Claim 116, wherein the or each phenolic compound is selected from 2-phenylphenol, 2-benzyl-4-chlorophenol, 2-cyclopentanol-4-chlorophenol, 4-t-amylphenol, 4-t-butylphenol, 4-chloro-2-pentylphenol, 6-chloro-2-pentylphenol, p-chlorometa-xlenol, 2,4,4-trichloro-2-hydroxydiphenol, thymol, 2-i-propyl-3-methylphenol, chlorothymol, 3-methyl-4-chlorophenol, 2,6-dichloro-4-n-alkyl phenols, 2,4-dichloro-meta-xlenol, 2,4,6-trichlorophenol and 2-benzyl-4-chlorophenol.

119. (currently amended) A composition according to Claim 111, wherein ~~the~~ at least one of the first anti-microbial agents is selected from benzenemethanaminium N-dodecyl-N,N-dimethylchloride and benzyl-C₁₂-C₁₆-alkyldimethyl-ammoniumchloride, and ~~the~~ at least one of the additional anti-microbial agents is selected from 2-phenylphenol, 2-octyl-2H-isothiazol-3-one, 5-chloro-2-methyl-2H-isothiazol-3-one, and 2-methyl-2H-isothiazol-3-one.

120. (previously presented) An anti-microbial composition according to Claim 106, comprising from 1 to 4% by volume of the at least one compound (ii).

121. (previously presented) An anti-microbial composition according to Claim 106, wherein the polar solvent is selected from n-propanol, water, isopropanol, diethylene glycol, dipropylene glycol and mixtures thereof.

122. (previously presented) An anti-microbial composition according to Claim 106, comprising from 1 to 70% by volume of the polar solvent.

123. (previously presented) An anti-microbial composition according to Claim 106, wherein the at least one compound (ii) is selected from polydimethylsiloxanes, polydimethylhydrosiloxanes and mixtures thereof.

124. (previously presented) A formulation comprising the anti-microbial composition according to Claim 106, and a functional material.

125. (currently amended) A formulation according to Claim 124, wherein the functional material ~~compound~~ is selected from plastics, fibres, coatings, films, laminates, adhesives, sealants, clays, china, ceramics, concrete, sand, paints, varnishes, lacquers, cleaning agents and settable or curable compositions such as fillers, grouts, mastics and putties.

126. (previously presented) A formulation according to Claim 124, wherein the formulation comprises from 0.1 to 5.0% by weight of the anti-microbial composition.

127. (previously presented) A formulation according to Claim 124, wherein the formulation comprises from 0.5 to 2.0% by weight of the anti-microbial composition.

128. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the anti-microbial composition according to Claim 106 to the surface.

129. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 124 to the surface.

130. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 125 to the surface.

131. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 126 to the surface.

132. (previously presented) A method of reducing or controlling the formulation of colonies of microorganisms on a surface, which method comprises applying the formulation of Claim 127 to the surface.

133. (previously presented) A method of manufacturing an anti-microbial composition according to Claim 106, the method comprising the steps of (a) mixing the or each anti-microbial agents together, (b) adding the at least one compound (ii) to the mixture of step (a), (c) adding the polar solvent to the mixture of step (b), and (d) agitating the resulting mixture until a clear solution is formed.

134. (previously presented) A method of manufacturing a formulation comprising the step of adding the anti-microbial composition of Claim 106 to a functional

material.

135. (new) An antimicrobial composition according to claim 105, wherein the compound (ii) is selected from the group consisting of polydimethylsiloxane having a chain length of from C₁₂ to C₂₀ and polydimethylhydrosiloxane having a chain length of from C₁₂ to C₂₀.

136. (new) An antimicrobial composition according to claim 123, wherein the compound (ii) is selected from the group consisting of polydimethylsiloxane having a chain length of from C₁₂ to C₂₀ and polydimethylhydrosiloxane having a chain length of from C₁₂ to C₂₀.

137. (new) An anti-microbial composition consisting essentially of:

- (i) at least two anti-microbial agents, wherein at least one of the anti-microbial agents is an anti-microbial agent having a high surface tension of from 20 to 35 mN/m, and is selected from the group consisting of (a) a quarternary ammonium compound having the general formula R¹R²R³R⁴N⁺X⁻, in which one or two of the R groups are alkyl substituted by aryl or interrupted by aryl or oxygen and the other R groups are the same or different and are C₁ to C₄ alkyl groups, (b) a dialkyldimethylammonium compound wherein the two non-methyl alkyl groups are selected from alkyl groups comprising from 8 to 12 carbon atoms, and (c) a benzalkonium halide or an aryl ring substituted benzalkonium halide,
- (ii) a compound having a low surface tension of from 8 to 14 mN/m, and selected from the group consisting of silanes, soya lecithins, polydimethylsiloxanes, and polydimethylhydroxysiloxanes, and
- (iii) a polar solvent, wherein in use the anti-microbial composition acts substantially to reduce or control the formation of microbial colonies on or at a surface to which the composition is applied.